

<110> The Government of the United States of America, et al.

<120> Recombinant Multivalent Malarial Vaccine Against *Plasmodium Falciparum*

<130> 03063-0440WP

<140>

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<170> PatentIn Ver. 2.0

<210> 1

<211> 1053

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: recombinant  
dna/protein

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<221> CDS

<222> (1)..(1053)

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tct tac atc tat gcg gat cat cat cat cat cat aaa cat aaa aaa 96  
Ser Tyr Ile Tyr Ala Asp His His His His His Lys His Lys Lys  
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tta aag caa cca ggg gat ggt aat cct tgg tcc cca tgt agt gta act 144  
Leu Lys Gln Pro Gly Asp Gly Asn Pro Trp Ser Pro Cys Ser Val Thr  
35 40 45

tgt gga aaa cct aaa gac gaa tta gat tat gaa aat gat att gaa aaa 192  
Cys Gly Lys Pro Lys Asp Glu Leu Asp Tyr Glu Asn Asp Ile Glu Lys  
50 55 60

aaa att tgt aaa atg gaa aaa tgt tcc agt gtg ttt aat gtc gta aat 240  
Lys Ile Cys Lys Met Glu Lys Cys Ser Ser Val Phe Asn Val Val Asn  
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agt aat tct gga tgt ttc aga cat tta gat gaa aga gaa gaa tgt aaa 288  
Ser Asn Ser Gly Cys Phe Arg His Leu Asp Glu Arg Glu Glu Cys Lys  
85 90 95

tgt tta tta gaa gat tca ggt agc aac gga aag aaa atc aca tgt gaa 336  
Cys Leu Leu Glu Asp Ser Gly Ser Asn Gly Lys Lys Ile Thr Cys Glu  
100 105 110

tgt act aaa cct gat tct aag cct att gtg caa tat gac aat ttc aat 384

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Cys Leu Leu Glu Asp Ser Gly Ser Asn Gly Lys Lys Ile Thr Cys Glu	
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tgt act aaa cct gat tct aag cct att gtg caa tat gac aat ttc aat	384
Cys Thr Lys Pro Asp Ser Lys Pro Ile Val Gln Tyr Asp Asn Phe Asn	
115 120 125	
gca aac cca aac gca aac ccc aat gca aat cct gat gga aat tgt gaa	432
Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asp Gly Asn Cys Glu	
130 135 140	
gat ata cca cat gta aat gaa ttt tca gca att gat ctt gga aat gct	480
Asp Ile Pro His Val Asn Glu Phe Ser Ala Ile Asp Leu Gly Asn Ala	
145 150 155 160	
gaa aaa tat gat aaa atg gat gaa cca caa cat tat ggg aaa tca ctc	528
Glu Lys Tyr Asp Lys Met Asp Glu Pro Gln His Tyr Gly Lys Ser Leu	
165 170 175	
act cca tta gaa gaa tta tat aaa cca aat gat aaa agt ttg tat cag	576
Thr Pro Leu Glu Glu Leu Tyr Lys Pro Asn Asp Lys Ser Leu Tyr Gln	
180 185 190	
tat ata aaa gca aat tct aaa ttt ata ggt ata act gaa cta agc aac	624
Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Ser Asn	
195 200 205	
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Thr Phe Ile Asn Asn Ala Gly Gln His Gly His Met His Gly Asn Glu	
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agg gaa gat gag aga acg ctt act aag gaa tat gaa gat att gtt ttg	720
Arg Glu Asp Glu Arg Thr Leu Thr Lys Glu Tyr Glu Asp Ile Val Leu	
225 230 235 240	
aaa gag ttt aca tat atg ata aac ttt gga aga gga cag aat tat tgg	768
Lys Glu Phe Thr Tyr Met Ile Asn Phe Gly Arg Gly Gln Asn Tyr Trp	
245 250 255	
gaa cat cca tat caa aaa agt gat caa cct aaa caa tat gaa caa cat	816
Glu His Pro Tyr Gln Lys Ser Asp Gln Pro Lys Gln Tyr Glu Gln His	
260 265 270	
tta aca gat tat gaa aaa att aaa gaa ggt aag ccc ttg gat aaa ttt	864
Leu Thr Asp Tyr Glu Lys Ile Lys Glu Gly Lys Pro Leu Asp Lys Phe	
275 280 285	
gga aat atc tat gat tat cac tat gag cat tct agt cca tct agt aca	912
Gly Asn Ile Tyr Asp Tyr His Tyr Glu His Ser Ser Pro Ser Ser Thr	
290 295 300	
aag tca tca agt cca tca aat gta aaa tca gct agt cta gct aca aga	960
Lys Ser Ser Ser Pro Ser Asn Val Lys Ser Ala Ser Leu Ala Thr Arg	
305 310 315 320	
tta atg aaa aaa ttt aaa gct gaa atc aga gat ttc ttc ggt ata agt	1008
Leu Met Lys Lys Phe Lys Ala Glu Ile Arg Asp Phe Phe Gly Ile Ser	

325

330

335

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&lt;211&gt; 350

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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Ser Tyr Ile Tyr Ala Asp His His His His His His Lys His Lys Lys  
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Leu Lys Gln Pro Gly Asp Gly Asn Pro Trp Ser Pro Cys Ser Val Thr  
 35 40 45

Cys Gly Lys Pro Lys Asp Glu Leu Asp Tyr Glu Asn Asp Ile Glu Lys  
 50 55 60

Lys Ile Cys Lys Met Glu Lys Cys Ser Ser Val Phe Asn Val Val Asn  
 65 70 75 80

Ser Asn Ser Gly Cys Phe Arg His Leu Asp Glu Arg Glu Glu Cys Lys  
 85 90 95

Cys Leu Leu Glu Asp Ser Gly Ser Asn Gly Lys Lys Ile Thr Cys Glu  
 100 105 110

Cys Thr Lys Pro Asp Ser Lys Pro Ile Val Gln Tyr Asp Asn Phe Asn  
 115 120 125

Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asp Gly Asn Cys Glu  
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Asp Ile Pro His Val Asn Glu Phe Ser Ala Ile Asp Leu Gly Asn Ala  
 145 150 155 160

Glu Lys Tyr Asp Lys Met Asp Glu Pro Gln His Tyr Gly Lys Ser Leu  
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Thr Pro Leu Glu Glu Leu Tyr Lys Pro Asn Asp Lys Ser Leu Tyr Gln  
 180 185 190

Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Ser Asn  
 195 200 205

Thr Phe Ile Asn Asn Ala Gly Gln His Gly His Met His Gly Asn Glu  
 210 215 220

Arg Glu Asp Glu Arg Thr Leu Thr Lys Glu Tyr Glu Asp Ile Val Leu  
 225 230 235 240

Glu His Pro Tyr Gln Lys Ser Asp Gln Pro Lys Gln Tyr Glu Gln His  
260 265 270

Gly Asn Ile Tyr Asp Tyr His Tyr Glu His Ser Ser Pro Ser Ser Thr  
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Asn Val Val Asn Ser  
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<210> 9

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Lys Pro Asn Asp Lys Ser Leu Tyr  
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Leu Leu

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Asp Leu

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Lys Glu Gly

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His Pro Tyr Gln Lys Ser  
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<210> 20  
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Val Leu Lys

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<210> 22  
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<210> 23  
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<212> PRT  
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Phe

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<212> PRT  
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